DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314

REPLY TO
ATTENTION OF:

DAEN-CWP-A

April 9, 1983

SUBJECT: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana. It is accompanied by the reports of the Board of Engineers for Rivers and Harbors and the District and Division Engineers. These reports are in response to resolutions adopted 12 June 1967 and 13 December 1971 by the Committee on Public Works of the United States Senate, and to a resolution adopted 19 October 1967 by the Committee on Public Works of the United States House of Representatives. The 1967 resolutions of both Committees requested the Board to review the report on the Mississippi River-Gulf Outlet and other pertinent reports with a view to determining whether the existing project should be modified. The Senate's resolution directed particular reference to providing a minimum depth of 50 feet and a minimum bottom width of 750 feet. The 1971 Senate resolution requested that the Board review the report on the Mississippi River, Baton Rouge to the Gulf of Mexico, and other pertinent reports with a view to determining if the existing project should be modified, with particular reference to providing a continuous channel 50 feet deep by 500 feet wide from Baton Rouge to the Gulf of Mexico.

2. The District and Division Engineers recommend that the existing project, Mississippi River, Baton Rouge to the Gulf of Mexico, be modified to provide for navigation improvements. Their proposed plan provides for a 55-foot depth over a 750-foot bottom width from the Gulf of Mexico to Baton Rouge, Louisiana, and a turning basin at the head of the deepened channel in Baton Rouge. Proposed modifications also include deepening the existing 35-foot-deep by 1,500-foot-wide channel at New Orleans to 40 feet, providing river training works in South Pass and Pass a Loutre, and creating wetlands and upland habitat along Southwest Pass. Based on a reanalysis of possible impacts of channel deepening due to saltwater intrusion, the reporting officers provided a supplemental report revising their recommended mitigation measures. The revised mitigation would provide for a sill to be installed on the river bottom during periods of low flow, and a water intake extension.

3. The Board of Engineers for Rivers and Harbors concurs generally in the views and recommendations of the reporting officers. However, the Board notes that the berthing areas will also require deepening in order to realize the estimated savings in transportation costs attributed to the proposed plan. Therefore, the Board believes that deepening of berthing areas should be a part of the proposed plan. The Board also notes that dredging equipment and operations necessary to implement and maintain a portion of the proposed plan in Baton Rouge would be different from those specified by the reporting officers. The different equipment and operations increase the project costs slightly. The Board examined the type and size of vessels expected to use the proposed turning basin in Baton Rouge and believes the basin should be reduced in width by 240 feet. The Board's consideration of vessel size, and including berthing and the use of floating cranes secured to the vessels to assist in loading and unloading, revealed that the Federal channel should be no closer than 200 feet to piers and wharves.

4. It is also noted that the implementation of this project to full depth and length would require a significant capital investment as well as a large amount of dredging equipment. The amount of dredging would involve about 136 million cubic yards initially and about 109 million cubic yards annually to maintain project dimensions. The latter amount is an increase of about 86 million cubic yards over what is dredged annually to maintain the existing project dimensions. The proposed project would increase the U. S. Army Corps of Engineers dredging program, nationally, by about 24 percent. Staged construction of the project would provide a sensible and affordable approach to implementation and earlier realization of benefits. Such a construction sequence would also minimize disruption of navigation and allow for a gradual increase in the dredging program. During pre-construction planning, the reporting officers will consider and develop a construction sequence to implement the recommended project in the most logical and efficient manner. Economic data for various depths and reaches are shown as an attachment to this report.

5. The State of Louisiana is also examining the advisability of staged construction. Governor Treen in his letter of 25 February 1983 stated that studies conducted by his Task Force finds that deepening the Mississippi River to mile 172 AHP would yield substantial net savings in transportation cost and that deepening above mile 172 AHP is less favorable but would still result in net transportation savings. Governor Treen stated general agreement with the Corps findings and recommendations.

6. The Department of Interior noted in its commentary on my proposed report the requirement that the Corps obtain a right-of-way from the Fish and Wildlife Service (FWS) prior to conducting any work on the Delta National Wildlife Refuge and that issuance of the right-of-way will be contingent upon a determination by the FWS Regional Director that the proposed work will be compatible with the purposes for which the refuge was established. In instances where damages may result, the Regional Director may require mitigation measures within the right-of-way or on adjacent FWS land.

7. Cost of the total project, including the revised mitigation measures, deepening of berthing areas, change in dredging equipment and operation in Baton Rouge, and reduced turning basin, is estimated at $525 million. Average annual benefits of savings in transportation costs are estimated at $1.5 billion. The benefit-cost ratio is 8.3 to 1. The Board recommends the project in accordance with the Administration's 15 July 1981 proposed cost-sharing legislation.

8. I concur in the findings, conclusions, and recommendations of the Board, but note that action on proposed cost-sharing legislation did not take place in the last Congress. The Administration is now preparing a new proposal to be sent to Congress for cost recovery and financing for deep draft channels and harbors, which would be applicable to this proposed project.

J. K. Bratton

J. K. BRATTON
Lieutenant General, USA
Chief of Engineers

Incl
as

Deep Draft Access to the Ports of
New Orleans and Baton Rouge, Louisiana

Summary of Economic Analysis of Selected Plan
By Reach and Project Depth 1/

Project Depth (feet)	First Cost	Average Annual Costs	Average Annual Benefits	Benefit-to-Cost Ratio	Net Benefits
		(In Million Dollars)			
	GULF to near DONALDSONVILLE (MILE 172)				
55	$288.9	$ 90.5	$1,258.0	13.9	$1,167.5
	DONALDSONVILLE to BATON ROUGE (MILE 172 to MILE 233.8)				
55	236.1	89.5	244.0	2.7	154.5
	NEW ORLEANS REACH (GULF to MILE 127)				
45	159.0	28.2	497.3	17.6	469.1
50	203.0	43.5	705.3	16.2	661.8
55	264.0	68.9	829.3	12.0	760.4
	NEW ORLEANS to BATON ROUGE (MILE 127 to MILE 233.8)				
45	181.0	32.6	394.1	12.1	361.5
50	212.0	69.2	575.6	8.3	506.4
55	261.0	111.1	672.7	6.0	561.6
	NEW ORLEANS and BATON ROUGE REACHES (GULF to MILE 233.8)				
45	310.0	66.8	891.4	14.6	830.6
50	415.0	112.7	1,280.9	11.4	1,168.2
55	525.0	180.0	1,502.0	8.3	1,322.0

1/ October 1982 Price Levels, 7-7/8%

DEPARTMENT OF THE ARMY
BOARD OF ENGINEERS FOR RIVERS AND HARBORS
KINGMAN BUILDING
FORT BELVOIR, VIRGINIA 22060

REPLY TO
ATTENTION OF:

BERH-PLN

1 April 1982

SUBJECT: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

Chief of Engineers
Department of the Army
Washington, DC 20314

Summary of Board Action

The Board finds that navigation improvements for the Mississippi River deep-draft channel from the Gulf of Mexico to Baton Rouge, Louisiana, are advisable. The improvements are needed and are economically, environmentally, and socially acceptable. The Board generally concurs with the reporting officers' plan to modify the existing project. The proposed plan provides for a 55-foot depth over a 750-foot bottom width from the Gulf of Mexico to Baton Rouge, and a turning basin at the head of the deepened channel in Baton Rouge. Proposed modifications also include deepening the existing 35-foot-deep by 1,500-foot-wide channel at New Orleans to 40 feet, providing river training works in South Pass and Pass a Loutre, and creating wetlands and upland habitat along Southwest Pass. Mitigation measures would provide for a sill to be installed on the river bottom during periods of low flow, and a water intake extension. Based on October 1981 price levels, the first cost of the proposed plan is estimated at $525 million, and the benefit-cost ratio is 8.4. The Board recommends the plan in accordance with the Administration's 15 July 1981 proposed cost-sharing legislation.

Summary of Report Under Review

1. Authority. This report is in response to resolutions adopted 12 June 1967 and 13 December 1971 by the Committee on Public Works of the United States Senate and on 19 October 1967 by the Committee on Public Works of the United States House of Representatives. The resolutions are quoted in the District Engineer's report.

2. Description of the study area. Focus of the study is on the Federal navigation projects providing deep-draft access to the Ports of New Orleans and Baton Rouge. The study area includes 11 parishes along the Mississippi River from Baton Rouge to the Gulf of Mexico in southeast Louisiana.

3. Economic development. In 1979, the Ports of New Orleans and Baton Rouge ranked first and fourth, respectively, among the Nation's ports in terms of total tonnage of waterborne commerce. In that year, tonnages moved through these ports totaled about 167 million and 77 million, respectively, with over 100 different products. Public and private terminals and transfer and storage facilities are available in both ports and at other locations along this reach of the Mississippi River. There are nine grain elevators and two coal terminals, with plans for several more, along the river south of Baton Rouge.

4. Existing and authorized improvements. Existing Federal navigation improvements pertinent to the study area include:

a. Mississippi River, Baton Rouge to the Gulf of Mexico. This project provides a 40-foot-deep channel with bottom widths varying from 1,000 feet (Head of Passes to New Orleans) to 500 feet (New Orleans to Baton Rouge). Entrance from the Gulf is through Southwest Pass via an 800-foot-wide channel that is 40 feet deep. The project also provides for a 35-foot-deep channel, 1,500 feet wide at New Orleans.

b. Mississippi River-Gulf Outlet. The project provides a 36-foot-deep and 500-foot-wide channel from the Gulf of Mexico to the Gulf Intracoastal Waterway (GIWW), and that portion of the GIWW to the Inner Harbor Navigation Canal. The Inner Harbor Navigation Canal, connecting the GIWW east of New Orleans to the Mississippi River, is owned by the State of Louisiana, but leased and operated by the U.S. Army Corps of Engineers. The Mississippi River-Gulf Outlet Project also provides an inner tidewater harbor consisting of a 1,000- by 2,000-foot turning basin, 36 feet deep. The 1956 River and Harbor Act, which authorized construction of the project, also authorized future construction, when economically justified, of a channel and lock in the vicinity of Meraux. That facility would provide an additional connection between the tidewater harbor and the Mississippi River.

c. Gulf Intracoastal Waterway. The project provides a 12-foot-deep by 125-foot-wide barge canal from Lake Borgne on the east to the Inner Harbor Navigation Canal. From the Harvey Canal Lock at Mississippi River mile 98.3 Above Head of Passes (AHP), the GIWW continues westerly. An alternate westward access is also

b. Enlargement of the existing channel in the Mississippi River from the Head of Passes (mile 0) to within the Port of Baton Rouge (mile 233.0 AHP) to a project depth of 55 feet and a bottom width of 750 feet;

c. A turning basin with a project depth of 55 feet, a bottom width of 1,600 feet, and a length of 4,000 feet, at the end of the enlarged channel in Baton Rouge (mile 233.0 AHP to 233.8 AHP);

d. Enlargement of the existing 35-foot channel along the left bank of the Mississippi River at New Orleans (mile 86.7 AHP to 104.5 AHP) to a project depth of 40 feet at the existing 1,500-foot bottom width;

e. River training works in South Pass and Pass a Loutre;

f. Creation of about 11,600 acres of wetlands and 11,400 acres of upland habitat through overbank disposal of dredged material in the vicinity of Southwest Pass; and

g. Freshwater reservoirs at East Point a la Hache and West Point a la Hache to mitigate for increased saltwater intrusion.

9. Economic evaluation. The District Engineer estimates the first cost of his proposed plan at about $435,000,000, based on May 1980 price levels. Of that amount, $264,600,000 would be Federal and $170,400,000 would be non-Federal, based on traditional cost sharing. Based on a 50-year period for economic analysis and an interest rate of 7-5/8 percent, the estimated annual costs are $147,000,000, including $113,000,000 for annual maintenance. Average annual benefits accruing from transportation savings are estimated at $1,310,200,000, and the benefit-cost ratio is 8.9.

10. Project effects. Implementation of the proposed project would involve dredging about 136 million cubic yards initially and about 109 million cubic yards annually to maintain project dimensions. The latter amount is an increase of about 86 million cubic yards over what is dredged annually to maintain the existing project. The proposed project would increase the National Dredging Program (1981 estimate of 363 million cubic yards) by 24 percent. At Venice (mile 10.5 AHP), dredged material disposal would be in deep areas of the river. From mile 19 BHP to mile 22 BHP, dredging will be by hopper dredge with disposal in the Gulf of Mexico. Between Venice and mile 19 BHP, dredging will be by cutterhead-pipeline dredges with disposal in adjacent overbank areas. This will permit the planned conversion of about 23,000 acres of estuarine areas to 11,600 acres of marsh and 11,400 acres of upland habitat.

provided at the Algiers Canal Lock at about Mississippi River mile 88 AHP. Project dimensions westward also provide a 12-foot depth and 125-foot width.

5. Problems and needs. Navigation problems in the study area consist of inadequate channel depths and widths to accommodate certain existing and expected deep-draft vessels calling on the Ports of Baton Rouge and New Orleans. Of those vessels moving over the Mississippi River in 1975 and 1976, approximately 48 percent of dry-bulk carriers and 68 percent of tankers moved light loaded. As smaller, obsolete vessels are replaced with larger and more efficient ships, the percentage of light-loaded traffic will increase under existing channel dimensions. There is a need to achieve higher economic efficiency and savings in transportation costs by providing larger navigation channels to the Ports of Baton Rouge and New Orleans. In addition, coastal marshlands in the study area are being lost at an increasing rate, currently about 40 square miles per year, as a result of several interrelated factors including erosion, subsidence, and man's activities. Since the national significance of these marshlands has been well established, there is a need to curtail these losses.

6. Improvements desired. Local interests desire the enlargement of the Mississippi River Channel, Baton Rouge to the Gulf of Mexico and the Mississippi River-Gulf Outlet Projects. They also desire creation of wetlands with dredged material in the vicinity of the Mississippi River mouth. Municipalities drawing their drinking water from the Mississippi River also desire mitigation for any significant increases in saltwater intrusion into municipal and industrial water supplies that might result from channel deepening.

7. Alternatives considered. Several alternative plans to provide deeper and wider navigation channels to New Orleans and Baton Rouge were considered. The plans consist of depths of 45, 50, 55, and 60 feet over varying widths in the Mississippi River and the Mississippi River-Gulf Outlet. Alternatives were evaluated incrementally to New Orleans and to Baton Rouge.

8. Plan of improvement. The plan selected by the District Engineer to meet the navigation needs of the study area would modify the Mississippi River, Baton Rouge to the Gulf of Mexico Project to provide for:

a. Enlargement of the existing channel in Southwest Pass from the Head of Passes (mile 0) to deepwater in the Gulf of Mexico at about mile 22 Below Head of Passes (BHP), to a project depth of 55 feet and a bottom width of 750 feet;

11. The proposed project is estimated to worsen existing saltwater intrusion problems. The frequency and duration at which the recognized standard of 250 mg/l chlorides would be exceeded at affected points along the river would be increased. Additional municipal water reservoirs to be provided at East Pointe a la Hache and at West Pointe a la Hache are to mitigate effects of the increased saltwater intrusion on waterworks between East and West Pointe a la Hache and the mouth. Upstream of East and West Pointe a la Hache, the impacts of increased saltwater intrusion were not considered significant and no mitigation measures are proposed.

12. Recommendation of the reporting officers. The District Engineer recommends that the existing project for deep-draft navigation, Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana, be modified to provide for navigation improvements in accordance with plans described in his report and subject to certain items of local cooperation. The Division Engineer concurs.

Review by the Board of Engineers for Rivers and Harbors

13. General. The scope of the Board's review encompassed the overall technical, economic, social, and environmental aspects involved in the improvements proposed by the District Engineer. The study and report were examined to determine compliance with applicable administrative and legislative policies and guidelines and to assure that the study was conducted so that all interested parties had adequate opportunity for input and comment.

14. Responses to the Division Engineer's public notice. The Division Engineer issued a public notice on 1 November 1981 stating the findings and recommendations of the reporting officers and inviting public comment to the Board. Five letters were received in response to the public notice.

a. The Sewerage and Water Board of New Orleans noted that the District Engineer's analysis was based on hydrologic data during years 1939 to 1964, and hence did not include critically low flows that were experienced from 1930 through 1936. The Sewerage and Water Board stated that it will oppose the project until two conditions are fulfilled. These conditions are:

(1) That the District Engineer's analysis of the impact of channel deepening on saltwater intrusion includes low-flow and salinity data dating back to 1930.

(2) That the recommended project includes measures to mitigate increases in saltwater intrusion at the Sewerage and Water Board's intakes.

Inclosures to the Sewerage and Water Board's letter included letters from Jefferson Hospital and the Dixie Brewing Company, New Orleans, stating concerns about impacts from increased saltwater intrusion.

b. Jefferson Parish transmitted a resolution, passed by the Parish Council on 9 December 1981, objecting to the proposed project unless mitigative measures are implemented to provide an alternative drinking water source or to protect the drinking water supply of Jefferson Parish against saltwater intrusion.

c. The Charles Dennery Company, New Orleans, uses water provided by Jefferson Parish in processing foods and has stated that processing operations will have to be curtailed for the duration of saltwater intrusion.

d. The Exxon Company, U.S.A., believes that beneficiaries of the project will be mostly nonpetroleum users, and that such beneficiaries should pay for the relocation of Exxon's pipelines. The company states that the Louisiana Offshore Oil Port (LOOP) monobuoy, when fully operational, will enable deep-draft tankers to discharge their cargoes without entering the river. The company believes that the project will provide little economic benefit to Exxon.

e. The Port of New Orleans states it is aware of some oil interests claiming that petroleum products would not benefit from transportation savings resulting from deepening the project. The Port inclosed a consultant's report which concluded that the project would be a cost-effective alternative for those refiners not members of LOOP. An information sheet prepared by an Executive Director of the Louisiana Offshore Terminal Authority was also inclosed, and showed that there would be a sizeable number of tanker receipts that could benefit from deepening the project.

15. Findings and conclusions. The Board of Engineers for Rivers and Harbors concurs in general with the views and recommendations of the reporting officers. The recommended improvements are economically justified and are engineeringly and environmentally acceptable. The report essentially complies with applicable policies and guidelines.

16. Saltwater intrusion. The Board carefully examined the saltwater intrusion analysis in the District Engineer's report. The analysis did not depict all conditions which could exist during periods of extreme low flow.

a. The reporting officers reanalyzed the impacts of channel deepening and what measures would be needed to mitigate for increased saltwater intrusion. Their reanalysis is provided in the inclosed supplemental report. They find that the Fairview thalweg crossing at about mile 115 AHP near Kenner effectively halts upstream movement of the saltwater wedge with both the existing 40-foot-deep channel and the proposed 55-foot-deep channel. However, the reporting officers find that the proposed channel deepening will significantly increase water surface chlorides at water intakes downstream of the Fairview crossing, and that this requires more extensive mitigation measures than originally provided for in the proposed plan.

b. The most effective and least costly alternative would provide a submerged sill at mile 64.1 AHP and a water intake extension. The sill would be installed during periods of low flow, estimated to average once every 5 years. It would be constructed to elevation -55 with dredged material, and would impede upstream movement of the saltwater wedge. To mitigate increases in saltwater intrusion downstream of mile 64.1 AHP, a new water intake would be provided upstream of the sill on the right bank of the river at mile 65 AHP. A pipeline would extend to West Pointe a la Hache at mile 49.2 AHP, and to a river crossing made to East Pointe a la Hache. The first cost of this alternative is estimated at $21 million. The Board concurs in the reanalysis of the reporting officers and believes that the alternative plan would effectively mitigate the increase in saltwater intrusion resulting from deepening the navigation channel to 55 feet. Installation of this alternative would be in lieu of the mitigation plan described in the feasibility report, and would increase the first costs of the proposed project by a net $19 million.

17. The requirements of local cooperation, which include all relocations of submerged pipelines, conform with current policy and are appropriate for this proposed project. The Board of Commissioners of the Port of New Orleans, designated by the Governor of Louisiana to represent the State, has given satisfactory assurances to provide all requirements of local cooperation.

18. Non-Federal berthing areas will require deepening commensurate with the proposed plan to realize the estimated savings in transportation costs. Accordingly, costs for dredging berthing areas should be included in the proposed project's estimated first and annual costs.